

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application)	
No. 10/728,680)	For: ADAPTIVE PILOT
)	ALLOCATION
Inventors: Fernandez-Corbaton et al.)	
)	
Examiner: Manoharan)	
)	
Filed: December 5, 2003)	Group No. 2617

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

On June 13, 2008, an Appeal Brief was filed in connection with the above-identified patent application. On June 18, 2009¹, an Examiner's Answer was mailed. This Reply Brief is being submitted in response to the Examiner's Answer.

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¹ An Examiner's Answer was originally filed on August 28, 2008. The Board of Patent Appeals and Interferences vacated that Answer on February 26, 2009, resulting in the filing of the June 18, 2009 Examiner's Answer.

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I. STATUS OF CLAIMS

Claims 1, 4-18 and 21-36 are pending in the present application.

Claims 1, 4, 11, 18, 21, 28, and 35-36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0154616 to Aoyama (hereinafter, "Aoyama"). Claims 5-6, 12-13, 22-23 and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoyama in view of U.S. Patent Application Publication No. 2003/0123406 to Yavuz et al. (hereinafter, "Yavuz"). Claims 7-8, 14-15, 24-25 and 31-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoyama in view of International Patent Application Publication No. WO 02/13448 to Farlow (hereinafter, "Farlow"). Appellants appeal the above rejections.

Claims 9-10, 16-17, 26-27 and 33-34 are objected to as being dependent upon a rejected base claim, but would otherwise be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2-3 and 19-20 have been canceled.

2. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are presented for review:

A. Whether claims 1, 4, 11, 18, 21, 28 and 35-36 are unpatentable under 35 U.S.C. § 102(b) over Aoyama.

B. Whether claims 5-6, 12-13, 22-23 and 29-30 are unpatentable under 35 U.S.C. § 103(a) over Aoyama in view of Yavuz.

C. Whether claims 7-8, 14-15, 24-25 and 31-32 are unpatentable under 35 U.S.C. § 103(a) over Aoyama in view of Farlow.

3. ARGUMENT

The arguments set forth on pages 3-7 of the Examiner's Answer are substantially similar to the arguments that were set forth in the Final Office Action dated November 2, 2007. These arguments were fully addressed in the Appeal Brief that Appellants submitted on June 13, 2008. Appellants provide the following in response to the arguments set forth on pages 8-18 of the Examiner's Answer.

A. Claims 1, 4, 11, 18, 21, 28 and 35-36 Rejected under 35 U.S.C. § 102(b)

Claims 1, 4, 11, 18, 21, 28 and 35-36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Aoyama. Appellants respectfully traverse.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 (citing Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the ... claim." Id. (citing Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). In addition, "the reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." In re Paulsen, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Claims 1, 4, 18, 21, and 35

Claim 1 will be discussed initially. Claim 1 recites:

A base station that adaptively allocates at least one resource between a traffic signal and a dedicated reference signal, comprising:

means for receiving a quality metric from a remote station, wherein the quality metric indicates the quality of a signal transmitted from the base station in a common reference signal and received by the remote station;

means for using the quality metric to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal to maximize the capacity for transmitting the traffic signal to the remote station; and

means for transmitting the dedicated reference signal and the traffic signal to the remote station,

wherein the received common reference signal and the received dedicated reference signal are used to train a receiver at the remote station.

As Appellants argued in the Appeal Brief, Aoyama does not disclose “using the quality metric” that is “receiv[ed] ... from a remote station” to “adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal,” as recited in claim 1.

The Examiner’s Answer refers to the following parts of Aoyama: “The DRC signal is ... transmitted to the base station apparatus....” (Aoyama at paragraph [0064]; cited in Examiner’s Answer at page 8.) “[C]ommunication resource allocation to each communication terminal apparatus 200 is determined by the transmission destination determination section 106 based on the DRC signal....” (Aoyama at paragraph [0066]; cited in Examiner’s Answer at page 8.) Thus, the Examiner’s argument appears to be that the DRC signal is a “quality metric” within the meaning of claim 1. Appellants respectfully disagree.

In claim 1, the “quality metric” is defined as “indicat[ing] the quality of a signal transmitted from the base station in a common reference signal and received by the remote station.” Thus, for a signal to be a “quality metric” within the meaning of claim 1, the signal must satisfy this limitation.

However, it cannot reasonably be maintained that the DRC signal in Aoyama “indicates the quality of a signal transmitted from the base station in a common reference signal and received by the remote station.” Rather, the DRC signal indicates the “transmission rate at which communication is possible at the desired quality.” (Aoyama at paragraph [0063].)

The Examiner argues that the DRC signal is “based on the CIR.” (Aoyama at paragraph [0063]; Examiner’s Answer at page 8.) Thus, assuming *arguendo* that the CIR is a “quality metric,” Aoyama describes resource allocation using a signal that is *based on* a quality metric. But that is not what claim 1 recites. Instead, claim 1 recites “using the quality metric” itself – not merely a signal that is *based on* the quality metric – “to adaptively allocate ... power.” Thus, Aoyama does not disclose “each and every element as set forth in the claim,” as would be required to anticipate claim 1. (MPEP § 2131.)

The Examiner argues that “[t]he transmission rate is based on CIR and therefore, DRC signal contains the quality metric information.” (Examiner’s Answer at page 8.) This is not correct. In Aoyama, the transmission rate is based on both the CIR and the “desired quality.”

(See Aoyama at paragraph [0057], stating that “the transmission rate calculation section 252 calculates the transmission rate at which reception is possible *with the desired quality*...”; emphasis added.) Thus, the calculated transmission rate in Aoyama does not necessarily indicate whether the CIR is high or not. For example if the calculated transmission rate in Aoyama is high, it does not necessarily mean that the CIR is high; perhaps the desired quality is low instead.

However, even assuming *arguendo* that the DRC is a “quality metric” within the meaning of claim 1, Aoyama still does not anticipate claim 1. More specifically, even if the DRC is a “quality metric,” then in order to anticipate claim 1, Aoyama must disclose “using the [DRC signal] to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal.” However, Aoyama does not disclose this.

The Examiner refers to a part of Aoyama which states that “communication resource allocation to each communication terminal apparatus 200 is determined ... based on the DRC signal.” (Aoyama at paragraph [0066]; cited in Examiner’s Answer at page 8.) However, Aoyama’s general reference to “communication resource allocation” does not disclose the specific subject matter recited in claim 1, namely “adaptively allocat[ing] a fixed amount of power between the traffic signal and the dedicated reference signal.”

The Examiner also refers to a part of Aoyama which states that the “total transmission power is fixed in HDR” and that “the transmission power ratio between code-multiplexed transmit data and a dedicated pilot signal is controlled in accordance with the propagation environment.” (Aoyama at paragraph [0139]; cited in Examiner’s Answer at page 8.) But this part of Aoyama does not have anything to do with the DRC signal, which is what the Examiner believes is the “quality metric” in claim 1. Aoyama’s reference to the “propagation environment” cannot reasonably be interpreted as a reference to the DRC signal. As indicated above, in order to anticipate claim 1, Aoyama must disclose “using the [DRC signal] to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal.” Because paragraph [0139] of Aoyama does not discuss the DRC signal, then paragraph [0139] does not disclose the claimed subject matter at issue.

The Examiner has not shown – nor can Appellants find – any link between paragraph [0066] of Aoyama (which discusses “resource allocation” based on the DRC signal) and

paragraph [0139] of Aoyama (which discusses controlling a fixed amount of transmission power). In essence, the Examiner is citing different parts of Aoyama which describe different elements of claim 1, without showing the relationships between these elements that are required by claim 1. Appellants respectfully submit that the Examiner's position is incorrect because, as the Federal Circuit recently reaffirmed, "the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but *must also disclose those elements 'arranged as in the claim.'*" Net MoveIn v. Verisign, No. 2007-1565 (Fed. Cir. Oct. 20, 2008) (quoting Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548 (Fed. Cir. 1983)) (emphasis added). Claim 1 does not merely recite a collection of disparate elements. Rather, claim 1 recites "using the quality metric" – which "indicates the quality of a signal transmitted from the base station in a common reference signal and received by the remote station" – "to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal." Aoyama does not disclose this claimed subject matter.

Thus, in summary, Aoyama does not anticipate claim 1 because Aoyama does not disclose using a "quality metric" to allocate power, as claimed. Aoyama describes using a DRC signal for resource allocation, but the DRC signal is not a "quality metric" as that term is defined in claim 1. Even assuming *arguendo* that the DRC signal referred to in Aoyama is a "quality metric" within the meaning of claim 1, Aoyama still does not anticipate claim 1 because Aoyama does not disclose "using the [DRC signal] to adaptively allocate a fixed amount of power between the traffic signal and the dedicated reference signal."

Claim 4 depends from claim 1. Claims 18 and 35 include subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Claim 21 depends from claim 18. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 4, 18, 21, and 35 be reversed for at least the same reasons as those presented above in relation to claim 1.

Claims 11, 28 and 36

Claim 11 will be discussed initially. Claim 11 recites:

A remote station that adaptively allocates at least one resource between a traffic signal and a dedicated reference signal, comprising:

means for receiving a common reference signal, a dedicated reference signal, and a traffic signal from a base station;

means for determining a quality metric of the received common reference signal;

means for transmitting the quality metric to the base station, wherein the base station uses the quality metric to adaptively allocate a fixed amount of power between the dedicated reference signal and the traffic signal to maximize the capacity for transmitting the traffic signal to the remote station; and

means for using the received common reference signal and the received dedicated reference signal to train a receiver at the remote station.

As Appellants argued in the Appeal Brief, Aoyama does not disclose “means for transmitting the quality metric to the base station, wherein the base station uses the quality metric to adaptively allocate a fixed amount of power between the dedicated reference signal and the traffic signal,” as recited in claim 11.

The Examiner’s arguments with respect to claim 11 are essentially the same as the arguments for claim 1, which were discussed above. The Examiner’s Answer refers to the following parts of Aoyama: “The signal transmitted as a radio signal from the communication terminal apparatus 200 is received by the antenna 101 of the base station apparatus 100, ... and the DRC signal is extracted.” (Aoyama at paragraph [0065]; cited in Examiner’s Answer at pages 11-12.) “[C]ommunication resource allocation to each communication terminal apparatus 200 is determined by the transmission destination determination section 106 based on the DRC signal....” (Aoyama at paragraph [0066]; cited in Examiner’s Answer at pages 11-12.) Thus, as with claim 1 discussed above, the Examiner’s argument appears to be that the DRC signal is a “quality metric” within the meaning of claim 1. Appellants respectfully disagree.

As discussed above, the DRC signal in Aoyama is not a “quality metric.” Rather, the DRC signal indicates the “transmission rate at which communication is possible at the desired quality.” (Aoyama at paragraph [0063].) However, even assuming *arguendo* that the DRC signal referred to in Aoyama is a “quality metric,” Aoyama still does not anticipate claim 11 because Aoyama does not disclose “us[ing] the [DRC signal] to adaptively allocate a fixed amount of power between the dedicated reference signal and the traffic signal,” as recited in claim 11.

In view of the foregoing, Appellants respectfully submit that claim 11 is allowable. Accordingly, Appellants respectfully request that the Examiner's rejection of claim 11 be reversed.

Claims 28 and 36 include subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 28 and 36 be reversed for at least the same reasons as those presented above in relation to claim 11.

B. Claims 5-6, 12-13, 22-23 and 29-30 Rejected under 35 U.S.C. § 103(a)

Claims 5-6, 12-13, 22-23 and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoyama in view of Yavuz. Appellants respectfully traverse.

Claims 5-6 and 22-23

Claims 5-6 depend from claim 1. Claims 22-23 depend from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 5-6 and 22-23 be reversed for at least the same reasons as those presented above in relation to claim 1.

Claims 12-13 and 29-30

Claims 12-13 depend from claim 11. Claims 29-30 depend from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 12-13 and 29-30 be reversed for at least the same reasons as those presented above in relation to claim 11.

C. Claims 7-8, 14-15, 24-25 and 31-32 Rejected under 35 U.S.C. § 103(a)

Claims 7-8, 14-15, 24-25 and 31-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoyama in view of Farlow. Appellants respectfully traverse.

Claims 7 and 24

Claim 7 depends from claim 1. Claim 24 depends from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 7 and 24 be reversed for at least the same reasons as those presented above in relation to claim 1.

In addition, as argued in the Appeal Brief, claim 7 is allowable because the following claimed subject matter in claim 7 is both novel and nonobvious with respect to the cited references: "means for transmitting a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." In addition, claim 24 is allowable because the following claimed subject matter in claim 24 is both novel and nonobvious with respect to the cited references: "the transmitter also transmits a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal."

The Examiner correctly acknowledges that Aoyama does not teach or suggest this claimed subject matter, but the Examiner asserts that this claimed subject matter is taught by Farlow. The Examiner's Answer refers to the following part of Farlow: "[C]ommand generation module 418, in one embodiment, generates values for ... a training sequence length parameter to control the insertion of training sequences." (Farlow at page 10, lines 24-25; cited in Examiner's Answer at page 13.) The Examiner seems to acknowledge that this "parameter" referred to by Farlow does not "represent[] the portion of the resource allocated to the dedicated reference signal," as recited in claims 7 and 24. However, the Examiner asserts that what is described by Farlow is "essentially the same thing" as what is recited in claims 7 and 24. (Examiner's Answer at page 14.) Even assuming *arguendo* that this assertion is correct, one having ordinary skill in the art would not have been motivated to modify Aoyama in view of the teachings of Farlow.

The Examiner argues that “[a]ny adaptive filter *requires* information such as the length of the training sequences ... or the number of tap coefficients ... or the transmission rate ... or the transmission power allocated to the dedicated reference signal to be transmitted to the receiving station.” (Examiner’s Answer at page 14; emphasis added.) Thus, as best understood, the Examiner is arguing that the subject matter of claims 7 and 24 is *required*, i.e., one having ordinary skill in the art would have been motivated to modify Aoyama in view of Farlow because they were *required* to do so. Appellants respectfully disagree. It is not *required* that such information be *transmitted* to the remote station. For example, as one possible alternative to what is claimed (namely, having the base station “transmit[] a parameter e_x to the remote station”), the base station and the remote station may agree on some implicit rules for determining the parameter e_x . (See paragraph [0079] of Appellants’ specification.)

The Examiner argues that “[n]o implicit rule (deterministic rule) can be used for a random (or time varying) environment.” (Examiner’s Answer at page 14.) Appellants respectfully disagree. Instead of configuring the base station to implement a particular algorithm for determining the “parameter e_x ” and then having the base station transmit that information to the remote station, the remote station could instead be configured to implement the algorithm for determining the “parameter e_x .” The base station and the remote station could agree on the algorithm that is used, so that the base station also knows what the value of the “parameter e_x ” is. The remote station could take into account the “random (or time varying) environment” in the same manner as the base station. Thus, it is certainly not *required* for the base station to “transmit[] a parameter e_x ” to the remote station, as recited in claims 7 and 24. The Examiner’s stated motivation for modifying Aoyama in view of Farlow is therefore incorrect.

In view of the foregoing, Appellants respectfully submit that claims 7 and 24 are allowable. Accordingly, Appellants respectfully request that the Examiner’s rejection of claims 7 and 24 be reversed.

Claims 8 and 25

Claim 8 depends from claim 1. Claim 25 depends from claim 18, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 1. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 8 and 25 be reversed for at least the same reasons as those presented above in relation to claim 1.

Claims 14 and 31

Claim 14 depends from claim 11. Claim 31 depends from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 14 and 31 be reversed for at least the same reasons as those presented above in relation to claim 11.

In addition, as argued in the Appeal Brief, claim 14 is allowable because the following claimed subject matter in claim 7 is both novel and nonobvious with respect to the cited references: "means for receiving a parameter e_x from the base station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal." In addition, claim 31 is allowable because the following claimed subject matter in claim 31 is both novel and nonobvious with respect to the cited references: "the receiver also receives a parameter e_x from the base station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal."

The Examiner's arguments with respect to claims 14 and 31 are essentially the same as the arguments for claims 7 and 24, which were discussed above. In summary, it appears as though the Examiner is arguing that the subject matter of claims 14 and 31 is *required*, i.e., one having ordinary skill in the art would have been motivated to modify Aoyama in view of Farlow because they were *required* to do so. However, as argued above, it is certainly not *required* for the base station to transmit a "parameter e_x " to the remote station, as in claims 14 and 31. As one possible alternative, the base station and the remote station may agree on some implicit rules for determining the parameter e_x . The Examiner's stated motivation for modifying Aoyama in view of Farlow is therefore incorrect.

In view of the foregoing, Appellants respectfully submit that claims 14 and 31 are allowable. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 14 and 31 be reversed.

Claims 15 and 32

Claim 15 depends from claim 11. Claim 32 depends from claim 28, which includes subject matter that is similar to the subject matter that was discussed above in relation to claim 11. Accordingly, Appellants respectfully request that the Examiner's rejection of claims 15 and 32 be reversed for at least the same reasons as those presented above in relation to claim 11.

Respectfully submitted,

Date:

8/13/09

By:



Eric Ho, Reg. No. 39,711
(858) 658-2752

QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, California 92121
Telephone: (858) 651-4125
Facsimile: (858) 658-2502